

REMARKS

Receipt of the Office Action mailed September 13, 2000 is acknowledged. Claims 1, 5, 9 and 10 have been amended. The amendment to "preparing" in claim 1 merely recites what was implicit in the language "forming" as originally filed. Likewise, the amendment "(b) forming a membrane . . ." at the end of claim 1 merely recites this previous language in a more clear manner and does not limit this claim. The addition of the term "V" in claim 1, limitation (2) merely sets forth an inadvertently omitted limitation and support for this can be found in the specification at, for example, page 10 line 6. The amendment to "curing the membrane . . ." incorporates the subject matter of originally pending claim 4. The basis for steps (b), (c) and (d) also be found in the specification at page 22, lines 7-25.

Claims 18 and 19 have been added. The basis for these new claims can be found, for example, at page 22, lines 17-20 and at page 26, lines 12-15 of the specification. Claim 4 has been cancelled. Claims 1-4, and 5-19 are pending. Entry of the forgoing amendments and favorable reconsideration are earnestly solicited.

Claims 1-17 stand rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite. Claims 1-7, 11-14 and 15-16 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Scholze et al. (U.S. Patent No. 4,238,590) (hereinafter "Scholze '590"). Claims 1-2, 4, 6, 15 and 16 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Scholze et al. (U.S. Patent No. 4,374,933) (hereinafter "Scholze '933"). These rejections are respectfully traversed.

1. Claims 1-19 are definite

Claims 1-17 stand rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite. Claim 1 has been amended to clarify this claim by adding the "(i)" before Formula I. This clarifies the claim to be internally consistent. The Examiner also argues that claim 1 is "redundant, since in (v), a combination of the compounds of the formulas I-IV are claimed." The Examiner is in error. This claim is definite as "(v)" states that the claim may contain a precondensate derived from "a compound shown represented in any of formulas I-IV", i.e. a precondensate of any of the said compounds and not a combination of formulas I-IV. Likewise, the rejection of claim 7 is in error. Claim 7 recites that the

process includes "at least one compound of the formula I." This is definite and this rejection should be withdrawn. The Examiner has also rejected claims 9-10 for allegedly failing to have proper antecedent basis. While applicants do not agree with the Examiner's rejection, these claims have been amended to indicate that the process additionally includes at least one compound of the formula VI. Reconsideration and withdrawal of these rejections is earnestly solicited.

2. *Claims 1-19 are Patentable over the Prior Art of Record*

Claims 1-7, 11-14 and 15-16 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Scholze '590. Claims 1-2, 4, 6, 15 and 16 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Scholze '933. These rejections are traversed.

Scholze '590 and Scholze '933 disclose silicic acid heteropolycondensates which are prepared by condensation of (a) at least one hydrolizable silicic acid derivative SiR_4 , (b) at least one substituted silane $\text{SiR}_n \text{R}''_{(4-n)}$ and (c) optionally at least one functional silane which may contain mercapto alkylene groups. Scholze '590 and Scholze '933 describe that the silicic acid derivatives are hydrolyzed and condensed. On completion of the condensation, the gel formed may be carefully dehydrated and the solvent evaporated off. (Scholze '590, Col. 5, lines 29-30; Scholze '933, Col. 5, lines 54-56). The bulk heteropolycondensates obtained in this way may be cut into thin disks which may then be used as membranes, either as such or after grinding. In another process, the liquid which contains the heteropolycondensates is cast onto a flat plate, and the solvent is evaporated off, (a thin membrane film being left behind on the surface. (Scholze '590, Col. 5, lines 51-62; Scholze '933, Col. 6, lines 4-15). Instead of flat membranes, filaments, hollow fibres, tubes and the like may be prepared. (Scholze '590, Col. 6, lines 6-10; Scholze '933, Col. 6, lines 26-29).

However, Scholze '590 and Scholze '933 do not disclose or suggest the use of functional silane compounds which are able to undergo organic polymerization as set forth in the instant claims. As discussed in the instant specification at pages 2 - 3, according to Scholze '590 and Scholze '933, the shaping operation to form the membranes, and its curing, take place by means of an inorganic condensation, i.e., by the construction of an Si-O-Si network. These membranes have very poor mechanical properties; and, in fact, the

mechanical stabilities only rarely satisfy the requirements made of them. Furthermore, these membranes are brittle and inflexible. However, the silanes defined in present claim 1 contain functional groups which allow *organic polymerization*. Thus, the membranes formed according to the present invention have high flexibility and may be self-supporting.

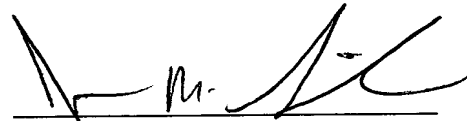
In addition, in the present invention the silanes contain carbon double bonds or other structures which allow the components to undergo an organic polymerization by thermal curing, radiation-induced curing or chemical induced curing. In the alternative, the silanes are used in conjunction with a reaction partner which contains a carbon double bond or a comparable structure which can be attacked by SH-groups in a Michael addition like reaction. Thus, the silanes may undergo organic polymerization. Scholze '590 and Scholze '933 do not disclose or suggest the use of functional silane compounds which are able to undergo organic polymerization as set forth in the instant claims.

Further, the method according to the present invention includes preparing an inorganically condensed network in the form of a low-viscosity to resinous liquid. This liquid may be brought into the correct shape and only afterwards, the curing is performed thereby stabilizing the shape of the membranes. In this way, self-supporting membranes may be prepared. Since neither Scholze '590 nor Scholze '933 disclose or suggest the method set forth in claim 1, this claim is patentable over Scholze '590 and Scholze '933. Since claims 2-3 and 5-19 depend from claim 1, for at least these reasons these claims are also patentable over Scholze '590.

3. *Conclusion*

In view of the foregoing, it is respectfully urged that the present claims are in condition for allowance. An early notice to this effect is earnestly solicited. Should there be any questions, Examiner Fortuna is courteously invited to contact the undersigned at the telephone number shown below.

Respectfully submitted,



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